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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/782,954	02/23/2004	Yoshiyuki Ishiyama	R2184.0304/P304	7560

24998 7590 02/22/2007

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EXAMINER	
GIESY, ADAM	
ART UNIT	PAPER NUMBER
2627	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/782,954	ISHIYAMA, YOSHIYUKI	
	Examiner	Art Unit	
	Adam R. Giesy	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 February 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 17-26 rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 17-26 are drawn to a "program" *per se* as recited in the preamble and as such is non-statutory subject matter. See MPEP §2106.IV.B.1.a. Data structures not claimed as embodied in computer readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g. Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held non-statutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed

aspects of the invention, which permit the data structure's functionality to be realized. In contrast, a claimed computer readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory. Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, 5-8, 9, 11, 13-17, 19, 21, 22, 24, 26-29, 31, 33, 34, 36, and 38-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Eastman et al. (hereinafter Eastman – 5,440,534).

Regarding claim 1, Eastman discloses a position control method for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on a recording surface of a recording medium

without a guide groove, said position control method comprising: a first step of trying to read a predetermined data recorded on the recording medium (see abstract; see also column 3, lines 34-37); a second step of determining whether or not the predetermined data is readable (see abstract; see also column 3, lines 38-42); and a third step of, according to whether or not the predetermined data is readable, switching a criterion for controlling the position of the object lens based on a tracking error signal (see abstract; see also column 3, lines 48-51).

Regarding claim 3, Eastman discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above and further that the third step comprises a step of: if the predetermined data is not readable, switching to a criterion that includes shifting an on-track determination position in the tracking error signal by a predetermined amount and controlling the position of the object lens with the tracking error signal, said on-track determination position of the tracking error signal being a position at which it is determined that on-track occurs (see column 4, lines 51-53; see also column 3, lines 48-51).

Regarding claim 5, Eastman discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above and further that the predetermined data includes an address data (see column 5, lines 62-68 – since the tracking error can be figured out at any time, the Examiner asserts that this inherently includes during the reading of the address data).

Regarding claim 6, Eastman discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above and further that the first step is performed

during a seek operation of the object lens (see column 5, lines 62-68 – since the tracking error and readability of the disc can be figured out at any time, the Examiner asserts that this inherently includes during seek operations).

Regarding claim 7, Eastman discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above and further that the first step is performed when determining a type of the recording medium (see column 4, lines 31-35 – Examiner asserts that since the tracking system is configured to work with CDs and doe4s not mention the DVD format, then the step of trying to read predetermined data would fail if the disc were comprised of any format other than a CD and therefor determining the disc type is inherent to step one).

Regarding claim 8, Eastman discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above and further that the first step is performed when reproducing a data recorded on the recording medium (see column 6, lines 5-6).

Regarding claim 9, Eastman discloses a position control method for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on a recording surface of a recording medium having a plurality of guide grooves, said position control method comprising: a first step of trying to read a predetermined data recorded in the guide grooves or in a region between two of the guide grooves on the recording medium following a criterion for controlling the object lens based on a tracking error signal with respect to the guide grooves or a tracking error signal with respect to the region between two of the guide grooves (see Figure 1 – Examiner is considering any grooves to be guide grooves since

information is written on the lands and grooves according to the current claims; see also column 3, lines 34-37); a second step of determining whether or not the predetermined data is readable (see abstract; see also column 3, lines 38-42); and a third step of, according to whether or not the predetermined data is readable, switching the criterion and trying again to read the predetermined data recorded in the guide grooves or in the region between two of the guide grooves (see Figure 1; see also column 3, lines 48-51).

Regarding claim 11, Eastman discloses all of the limitations of claim 9 as discussed in the claim 9 rejection above and further that the third step comprises a step of: if the predetermined data is not readable, switching to a criterion that includes shifting an on-track determination position in the tracking error signal by a predetermined amount and controlling the position of the object lens with the tracking error signal, said on-track determination position of the tracking error signal being a position at which it is determined that on-track occurs (see column 4, lines 51-53; see also column 3, lines 48-51).

Regarding claim 13, Eastman discloses all of the limitations of claim 9 as discussed in the claim 9 rejection above and further that the predetermined data includes an address data (see column 5, lines 62-68 – since the tracking error can be figured out at any time, the Examiner asserts that this inherently includes during the reading of the address data).

Regarding claim 14, Eastman discloses all of the limitations of claim 9 as discussed in the claim 9 rejection above and further that the first step is performed during a seek operation of the object lens (see column 5, lines 62-68 – since the

tracking error and readability of the disc can be figured out at any time, the Examiner asserts that this inherently includes during seek operations).

Regarding claim 15, Eastman discloses all of the limitations of claim 9 as discussed in the claim 9 rejection above and further that the first step is performed when determining a type of the recording medium (see column 4, lines 31-35 – Examiner asserts that since the tracking system is configured to work with CDs and doe4s not mention the DVD format, then the step of trying to read predetermined data would fail if the disc were comprised of any format other than a CD and therefor determining the disc type is inherent to step one).

Regarding claim 16, Eastman discloses all of the limitations of claim 9 as discussed in the claim 9 rejection above and further that the first step is performed when reproducing a data recorded on the recording medium (see column 6, lines 5-6).

Regarding claim 17, Eastman discloses a program executable on a computer for controlling an optical disk device that emits a light beam on a recording surface of a recording medium without a guide groove and receives light reflected from the recording surface of the recording medium, said program comprising: a first step of trying to read a predetermined data recorded on the recording medium in response to a control request for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on the recording surface of the recording medium (see Figure 1; see also column 3, lines 34-37); a second step of determining whether or not the predetermined data is readable (see abstract; see also column 3, lines 38-42); and a third step of, according to whether or

not the predetermined data is readable, switching a criterion for controlling the position of the object lens based on a tracking error signal (see Figure 1; see also column 3, lines 48-51).

Regarding claim 19, Eastman discloses all of the limitations of claim 17 as discussed in the claim 17 rejection above and further that the third step comprises a step of: if the predetermined data is not readable, switching to a criterion that includes shifting an on-track determination position in the tracking error signal by a predetermined amount and controlling the position of the object lens with the tracking error signal, said on-track determination position of the tracking error signal being a position at which it is determined that on-track occurs (see column 4, lines 51-53; see also column 3, lines 48-51).

Regarding claim 21, Eastman discloses all of the limitations of claim 17 as discussed in the claim 17 rejection above and further that the predetermined data includes an address data (see column 5, lines 62-68 – since the tracking error can be figured out at any time, the Examiner asserts that this inherently includes during the reading of the address data).

Regarding claim 22, Eastman discloses a program executable on a computer for controlling an optical disk device that emits a light beam on a recording surface of a recording medium having a plurality of guide grooves and receives light reflected from the recording surface, said program comprising: a first step of, in response to a control request for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on the recording

surface of the recording medium, trying to read a predetermined data recorded in the guide grooves or in a region between two of the guide grooves on the recording medium following a criterion for controlling the object lens based on a tracking error signal with respect to the guide grooves or a tracking error signal with respect to the region between two of the guide grooves (see Figure 1 – Examiner is considering any grooves to be guide grooves since information is written on the lands and grooves according to the current claims; see also column 3, lines 34-37); a second step of determining whether or not the predetermined data is readable (see abstract; see also column 3, lines 38-42); and a third step of, according to whether or not the predetermined data is readable, switching the criterion and trying again to read the predetermined data recorded in the guide grooves or in the region between two of the guide grooves (see Figure 1; see also column 3, lines 48-51).

Regarding claim 24, Eastman discloses all of the limitations of claim 22 as discussed in the claim 22 rejection above and further that the third step comprises a step of: if the predetermined data is not readable, switching to a criterion that includes shifting an on-track determination position in the tracking error signal by a predetermined amount and controlling the position of the object lens with the tracking error signal, said on-track determination position of the tracking error signal being a position at which it is determined that on-track occurs (see column 4, lines 51-53; see also column 3, lines 48-51).

Regarding claim 26, Eastman discloses all of the limitations of claim 22 as discussed in the claim 22 rejection above and further that the predetermined data

includes an address data (see column 5, lines 62-68 – since the tracking error can be figured out at any time, the Examiner asserts that this inherently includes during the reading of the address data).

Regarding claim 27, Eastman discloses a storage medium for storing a program executable on a computer for controlling an optical disk device that emits a light beam on a recording surface of a recording medium without a guide groove and receives light reflected from the recording surface of the recording medium, said program comprising: a first step of trying to read a predetermined data recorded on the recording medium in response to a control request for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on the recording surface of the recording medium (see Figure 1; see also column 3, lines 34-37); a second step of determining whether or not the predetermined data is readable (see abstract; see also column 3, lines 38-42); and a third step of, according to whether or not the predetermined data is readable, switching a criterion for controlling the position of the object lens based on a tracking error signal (see Figure 1; see also column 3, lines 48-51).

Regarding claim 28, Eastman discloses a storage medium for storing a program executable on a computer for controlling an optical disk device that emits a light beam on a recording surface of a recording medium having a plurality of guide grooves and receives light reflected from the recording surface of the recording medium, said program comprising: a first step of, in response to a control request for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral

track or of concentric tracks formed on the recording surface of the recording medium, trying to read a predetermined data recorded in the guide grooves or in a region between two of the guide grooves on the recording medium following a criterion for controlling the object lens based on a tracking error signal with respect to the guide grooves or a tracking error signal with respect to the region between two of the guide grooves (see Figure 1 – Examiner is considering any grooves to be guide grooves since information is written on the lands and grooves according to the current claims; see also column 3, lines 34-37); a second step of determining whether or not the predetermined data is readable (see abstract; see also column 3, lines 38-42); and a third step of, according to whether or not the predetermined data is readable, switching the criterion and trying again to read the predetermined data recorded in the guide grooves or in the region between two of the guide grooves (see Figure 1; see also column 3, lines 48-51).

Regarding claim 29, Eastman discloses a position control device for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on a recording surface of a recording medium without a guide groove, said position control device comprising: a trial unit configured to try to read a predetermined data recorded on the recording medium (Figure 2, elements 19, 23, and 25); and a control unit configured to determine whether or not the predetermined data is readable, and according to whether or not the predetermined data is readable, to switch a criterion for controlling the position of the object lens based on a tracking error signal for control of the position of the object lens (elements 24 and 17).

Regarding claim 31, Eastman discloses all of the limitations of claim 29 as discussed in the claim 29 rejection above and further that the third step comprises a step of: if the predetermined data is not readable, switching to a criterion that includes shifting an on-track determination position in the tracking error signal by a predetermined amount and controlling the position of the object lens with the tracking error signal, said on-track determination position of the tracking error signal being a position at which it is determined that on-track occurs (see column 4, lines 51-53; see also column 3, lines 48-51).

Regarding claim 33, Eastman discloses all of the limitations of claim 29 as discussed in the claim 29 rejection above and further that the predetermined data includes an address data (see column 5, lines 62-68 – since the tracking error can be figured out at any time, the Examiner asserts that this inherently includes during the reading of the address data).

Regarding claim 34, Eastman discloses a position control device for controlling a position of an object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on a recording surface of a recording medium having a plurality of guide grooves, said position control device comprising: a trial unit configured to try to read a predetermined data recorded in the guide grooves or in a region between two of the guide grooves on the recording medium following a criterion for controlling the object lens based on a tracking error signal with respect to the guide grooves or the region between two of the guide grooves (see Figure 1 – Examiner is considering any grooves to be guide grooves since information is written on the lands

and grooves according to the current claims; see also Figure 2, elements 19, 23, and 25); and a control unit configured to determine whether or not the predetermined data is readable, and according to whether or not the predetermined data is readable, to change the criterion and to try again to read the predetermined data recorded in the guide grooves or in a region between two of the guide grooves (Figure 2, elements 24 and 17).

Regarding claim 36, Eastman discloses all of the limitations of claim 34 as discussed in the claim 34 rejection above and further that the third step comprises a step of: if the predetermined data is not readable, switching to a criterion that includes shifting an on-track determination position in the tracking error signal by a predetermined amount and controlling the position of the object lens with the tracking error signal, said on-track determination position of the tracking error signal being a position at which it is determined that on-track occurs (see column 4, lines 51-53; see also column 3, lines 48-51).

Regarding claim 38, Eastman discloses all of the limitations of claim 34 as discussed in the claim 34 rejection above and further that the predetermined data includes an address data (see column 5, lines 62-68 – since the tracking error can be figured out at any time, the Examiner asserts that this inherently includes during the reading of the address data).

Regarding claim 39, Eastman discloses an optical disk device for reproducing predetermined data on a recording medium without a guide groove, said optical disk device comprising: a light source (Figure 2, element 11); an optical system that includes

an object lens for condensing a light beam from the light source to a recording surface of the recording medium and directs a light beam reflected from the recording surface to a predetermined light reception position (elements 15, 13, and 18); a light detection unit arranged at the light reception position (19); a position control device for controlling a position of the object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on the recording surface of the recording medium (8); and a processing unit configured to perform reproducing the predetermined data on a recording medium (17), wherein: said position control device comprises: a trial unit configured to try to read a predetermined data recorded on the recording medium (19, 23, and 25); and a control unit configured to determine whether or not the predetermined data is readable, and according to whether or not the predetermined data is readable, to switch a criterion for controlling the position of the object lens based on a tracking error signal for control of the position of the object lens (24 and 17).

Regarding claim 40, Eastman discloses an optical disk device for reproducing predetermined data on a recording medium having a plurality of guide grooves, said optical disk device comprising: a light source (Figure 2, element 11); an optical system that includes an object lens for condensing a light beam from the light source to a recording surface of the recording medium and directs a light beam reflected from the recording surface to a predetermined light reception position (elements 15, 13, and 18); a light detection unit arranged at the light reception position (19); a position control device for controlling a position of the object lens in a direction perpendicular to a tangential direction of a spiral track or of concentric tracks formed on the recording

surface of the recording medium (8); and a processing unit configured to perform reproducing the predetermined data on a recording medium (17), wherein: said position control device comprises: a trial unit configured to try to read a predetermined data recorded in the guide grooves or in a region between two of the guide grooves on the recording medium following a criterion for controlling the object lens based on a tracking error signal with respect to the guide grooves or the region between two of the guide grooves (Figure 2, elements 19, 23, and 25; see also Figure 1 – Examiner is considering any grooves to be guide grooves since information is written on the lands and grooves according to the current claims); and a control unit configured to determine whether or not the predetermined data is readable, and according to whether or not the predetermined data is readable, to change the criterion and to try again to read the predetermined data recorded in the guide grooves or in a region between two of the guide grooves (Figure 2, elements 24 and 17).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 2, 4, 10, 12, 18, 20, 23, 25, 30, 32, 35, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eastman et al. (hereinafter Eastman – 5,440,534) in view of Tanaka et al. (hereinafter Tanaka – US Pat. No. 5,363,356).

Regarding claim 2, Eastman discloses all of the limitations of claim 1 as discussed in the claim 1 rejection above. Eastman does not disclose reversing a polarity of the tracking error signal.

Tanaka discloses a tracking system for optical discs wherein the system switches to a criterion that includes reversing a polarity of the tracking error signal and controlling the position of the object lens based on the reversed-polarity tracking error signal (see column 5, lines 3-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal across zero crossings.

Regarding claim 4, Eastman discloses all of the limitations of claim 3 as discussed in the claim 3 rejection above. Eastman does not disclose that the predetermined interval is half of a wavelength.

Tanaka discloses a tracking system for optical discs wherein the distance between tracks is equal to half of a wavelength of a waveform of the tracking error signal (see Figure 4 – note that the distance between element 'A' and element 'B' is one half of a wavelength of the tracking error signal).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to

continuously calculate the tracking error signal and quickly switch positions if the tracking error signal is too large.

Regarding claim 10, Eastman discloses all of the limitations of claim 9 as discussed in the claim 9 rejection above. Eastman does not disclose reversing a polarity of the tracking error signal.

Tanaka discloses a tracking system for optical discs wherein the system switches to a criterion that includes reversing a polarity of the tracking error signal and controlling the position of the object lens based on the reversed-polarity tracking error signal (see column 5, lines 3-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal across zero crossings.

Regarding claim 12, Eastman discloses all of the limitations of claim 11 as discussed in the claim 11 rejection above. Eastman does not disclose that the predetermined interval is half of a wavelength.

Tanaka discloses a tracking system for optical discs wherein the distance between tracks is equal to half of a wavelength of a waveform of the tracking error signal (see Figure 4 – note that the distance between element 'A' and element 'B' is one half of a wavelength of the tracking error signal).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with

the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal and quickly switch positions if the tracking error signal is too large.

Regarding claim 18, Eastman discloses all of the limitations of claim 17 as discussed in the claim 17 rejection above. Eastman does not disclose reversing a polarity of the tracking error signal.

Tanaka discloses a tracking system for optical discs wherein the system switches to a criterion that includes reversing a polarity of the tracking error signal and controlling the position of the object lens based on the reversed-polarity tracking error signal (see column 5, lines 3-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal across zero crossings.

Regarding claim 20, Eastman discloses all of the limitations of claim 19 as discussed in the claim 19 rejection above. Eastman does not disclose that the predetermined interval is half of a wavelength.

Tanaka discloses a tracking system for optical discs wherein the distance between tracks is equal to half of a wavelength of a waveform of the tracking error signal (see Figure 4 – note that the distance between element 'A' and element 'B' is one half of a wavelength of the tracking error signal).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal and quickly switch positions if the tracking error signal is too large.

Regarding claim 23, Eastman discloses all of the limitations of claim 22 as discussed in the claim 22 rejection above. Eastman does not disclose reversing a polarity of the tracking error signal.

Tanaka discloses a tracking system for optical discs wherein the system switches to a criterion that includes reversing a polarity of the tracking error signal and controlling the position of the object lens based on the reversed-polarity tracking error signal (see column 5, lines 3-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal across zero crossings.

Regarding claim 25, Eastman discloses all of the limitations of claim 24 as discussed in the claim 24 rejection above. Eastman does not disclose that the predetermined interval is half of a wavelength.

Tanaka discloses a tracking system for optical discs wherein the distance between tracks is equal to half of a wavelength of a waveform of the tracking error

signal (see Figure 4 – note that the distance between element 'A' and element 'B' is one half of a wavelength of the tracking error signal).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal and quickly switch positions if the tracking error signal is too large.

Regarding claim 30, Eastman discloses all of the limitations of claim 29 as discussed in the claim 29 rejection above. Eastman does not disclose reversing a polarity of the tracking error signal.

Tanaka discloses a tracking system for optical discs wherein the system switches to a criterion that includes reversing a polarity of the tracking error signal and controlling the position of the object lens based on the reversed-polarity tracking error signal (see column 5, lines 3-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal across zero crossings.

Regarding claim 32, Eastman discloses all of the limitations of claim 31 as discussed in the claim 31 rejection above. Eastman does not disclose that the predetermined interval is half of a wavelength.

Tanaka discloses a tracking system for optical discs wherein the distance between tracks is equal to half of a wavelength of a waveform of the tracking error signal (see Figure 4 – note that the distance between element 'A' and element 'B' is one half of a wavelength of the tracking error signal).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal and quickly switch positions if the tracking error signal is too large.

Regarding claim 35, Eastman discloses all of the limitations of claim 34 as discussed in the claim 34 rejection above. Eastman does not disclose reversing a polarity of the tracking error signal.

Tanaka discloses a tracking system for optical discs wherein the system switches to a criterion that includes reversing a polarity of the tracking error signal and controlling the position of the object lens based on the reversed-polarity tracking error signal (see column 5, lines 3-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal across zero crossings.

Regarding claim 37, Eastman discloses all of the limitations of claim 36 as discussed in the claim 36 rejection above. Eastman does not disclose that the predetermined interval is half of a wavelength.

Tanaka discloses a tracking system for optical discs wherein the distance between tracks is equal to half of a wavelength of a waveform of the tracking error signal (see Figure 4 – note that the distance between element 'A' and element 'B' is one half of a wavelength of the tracking error signal).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the positioning system as disclosed by Eastman with the tracking error system as disclosed by Tanaka, the motivation being to be able to continuously calculate the tracking error signal and quickly switch positions if the tracking error signal is too large.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Ogata et al. (US Pat. No. 5,940,364) discloses a positioning system that uses the tracking error signal and modifies it by a wavelength in order to improve the signal.

b. Kobayashi (US Pat. No. 6,775,209 B2) discloses a positioning system that uses the tracking error signal.

c. Nagai et al. (US Pat. No. 5,862,112) discloses a positioning system that uses a tracking error signal in relation to guide grooves.

d. Nagasawa et al. (US Pat. No. 6,275,466 B1) discloses a positioning system that uses the tracking error signal.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adam R. Giesy whose telephone number is (571) 272-7555. The examiner can normally be reached on 8:00am- 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William R. Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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ARG 2/16/2007

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